

Indigo makes its move at DRUPA 2012: out in width, up in throughput, and, great timing!

Indigo 10000: The B2-sheet size Format Breakthrough

DRUPA has spent twenty years quietly building itself into the world's most anticipated digital print show for all its analog origins and appearance. At a time when the analog commercial print industry is at maximum crisis and as high volume static print demand accelerates into an ever faster decline HP Indigo is launching its proven digital press in a breakthrough B2-sheet size format (commonly referred to as half-sheet size in the US and 50cmx70cm in Europe), with an actual sheet size of up to 75x53cm.

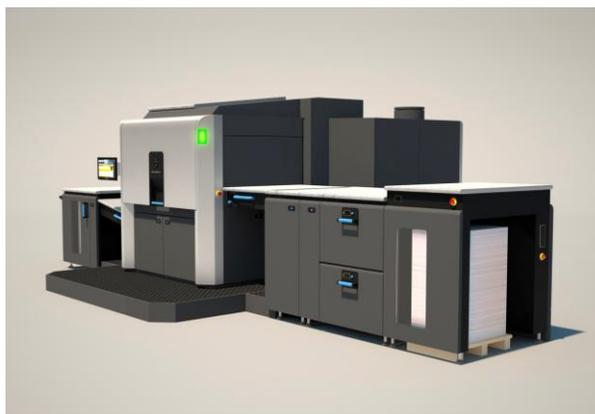
The 10000 is part of a portfolio of new presses to be presented by Indigo at DRUPA including the Indigo 7600, W7250 & 5600 discussed below, as well as the 20000 and 30000 presses which will be available from late 2013 for the packaging markets.

The 29.5"x20.8" sheet size of the new Indigo 10000 more than doubles Indigo's prior maximum throughput. The new sheet size enables not just greater productivity (and lower running cost per print), it also opens up the ability to digitally print high-margin specialty applications such as pocket folders, tri-fold marketing brochures, book covers, and even small posters.

Furthermore, the 10000 is the first of a series of presses designed to go beyond the commercial offset print market and to offer the benefits of offset-quality digital print to the folding carton and flexible packaging industry, building on the driving success Indigo has already achieved in the previously 100% analog Label print and conversion market.

This introduction of the Indigo 10000 comes at a time of crisis for the commercial print industry; With offset print volumes plummeting 4-5% annually, and the number of ever smaller run length jobs per day growing exponentially, efficiency levels among commercial printers have fallen to their lowest levels ever. Digital printing, once seen as a niche and distraction by commercial printers, has now become the indispensable automation tool with its this new print width; rather than being the enemy of commercial printers, digital printing has become the savior.

Indigo 10000 Sheet-Fed B2 Press



Source: HP Indigo, 2012

The Indigo Portfolio Strategy

We walked into Indigo's headquarters and factory this January with a sense of anticipation. Indigo has never been a company to practice false modesty and the new claims were impressive. We understood their import pretty well. The strategy outlined to us before we got to Israel was made up of the following three components:

1. **Accelerate Sales to Indigo's Existing Commercial Print & Labels market**
 Indigo is pushing further into their core Commercial Print & Labels Market at DRUPA from an already established position of strength by launching new versions of existing presses with the Indigo 5600, the Indigo 7600 & the Indigo W7250, to complement the Label Expo introductions of the Indigo WS6600 and WS4600. They are poised with these presses to see their influence in the commercial print and labels market accelerate and to increasingly take up a role in the *financial* mainstream of commercial print in particular (see below). That is because of the appeal of the presses themselves, but also because of the particular timing for the commercial print market.
2. **Take the Commercial Print market to the next B2 level**
 Indigo is also taking the commercial print market to the next level by going 29 inches wide into B2 with the new wide press Indigo 10000 – a format which allows them now to print almost any final use A-sized product. This is something we had not just naturally anticipated from *any* EP vendor, and which represents an important psychological threshold achievement confirming Indigo in the format as well as financial mainstream of the commercial print market.
3. **Take the B2 Chassis as the base for a long-term Packaging Market from 2013 on**
 Indigo is also focused on future 29 inch wide products they are showing focused on the long-term in Packaging markets with the Indigo 20000 and the Indigo 30000.

We went away convinced of the validity of Indigo's claims and ambitions, but let us look at these issues one by one.



1 - Commercial Print Market – The Right Moment and the Right Focus

Commercial printers have during the last 7-8 years become the most important channel for digital presses. The newer generations of production digital presses have come to be seen as a revenue and profit life-line for many printers. Not just Indigo of course, but Indigo's share is the biggest.

Indigo Offset Print Quality equivalence

The perception of Indigo this time round in the commercial print market is first, that they are synonymous beyond all others in that sector with offset print quality equivalence, if not better.

High-Priced Digital Press Output

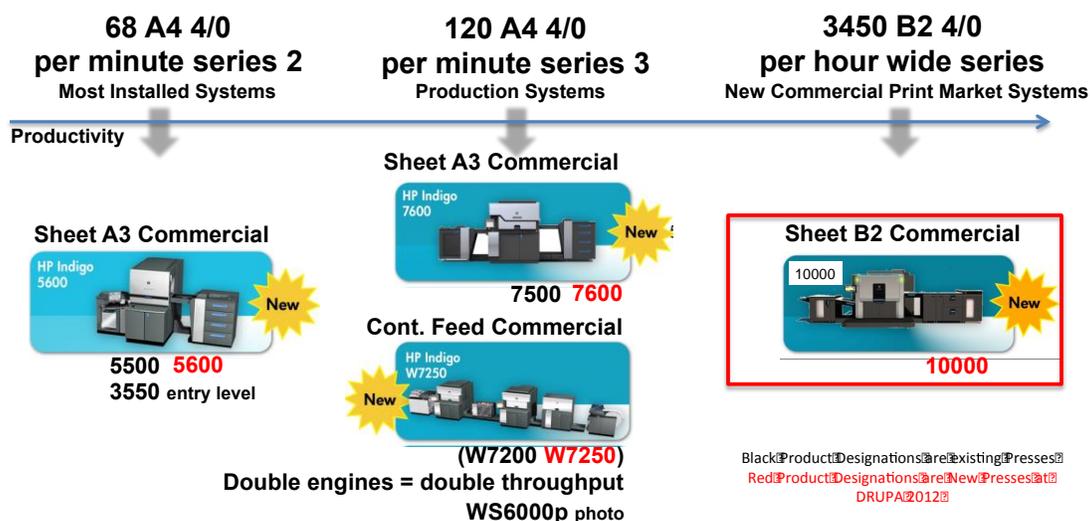
Second, printed products off digital presses yield much higher prices than offset print, and this is now being recognized in the mainstream of the commercial print industry as of strategic significance to the survival of printers. The ability to leverage the digital press has become a life saver precisely because relatively small digital press print runs and page counts yield high revenues and margins. This is what is meant when we said Indigo is becoming a player in the *financial* mainstream of the commercial print market: their presses yield significant new revenues and much higher margins without having to capture large shares of total print volumes.

Digital Presses as core integrative Components of Communications Services Offerings

Even more importantly, digital presses now fit seamlessly into a newly-integrated and available range of communications services including print and non-print modes. The digital presses are like the final piece in the puzzle and in fact represent for many printers in the US, Europe and China who now describe themselves as communications service providers, arguably the most important component of their communications offerings – it is variable and on-demand digital color print as the crown jewel of a premium-priced communications services offering.

The commercial print market is the target of Indigo's mainstream offerings in the 3xxx, 5xxx and 7xxx series presses as well as the new B2 10000 press. The 10000 is new at DRUPA 2012. Also new at DRUPA will be the 5600 as a new version of the 5500, the 7600 as a new version of the 7500 and the W7250 as a new version of the WT7200.

Indigo Commercial Presses



Deep-Dive Analysis of the Existing Commercial Print Market for Digital Presses and its Growth Potential

For leading printers intending to survive bad industry times the digital press has become a piece of technology whose unique capabilities have become much more obvious. That is partly because of experience, but is partly also because a lot of communications technology has caught up with it and enabled it to become an integrative component within a wider products and services spectrum. This is the context for our analysis of the Commercial Print market's development potential for Indigo's existing pre-B2 and newly enhanced presses as well as for the 10000 B2 press.

High Price Based on Unique Digital Value Propositions

Digital presses generate output which attracts high prices because the value they offer is unique to that technology. These are the principal base value propositions which Indigo commercial print market presses offer. They are worth thinking about as they are still highly valid and value-yielding, and they are not as well understood as they should be:

- **Fast Response**

This is about greatly increasing the flexibility of your response to your customers – being relevant and enabling them to respond faster to their own customers. This is what really drives the Short Runs and Very Short Runs so famously claimed as the unique capability of digital print. In reality a lot of offset technology can now do very short runs economically, but digital's fast response is something much more difficult for offset to emulate
- **Integration of print communications with virtual communications**

This seems obvious, but has been one of the hardest components of the new communications industry to implement. It is about digital print being fully online and always available to the constantly changing flux of data driving business's relationships with customers. It has been hard to implement because it is dependent on the implementation of data management and IT skills on the part of the printer. That is not a traditional printer skill and its growing leverage by companies is becoming a major competitive factor among print companies. *This is THE most important of all Value Propositions that digital presses generate*
- **Versioning & Personalization**

This is the application of Communications Integration skills realized in the printer's infrastructure, and it has required forward missionary work among printers' customers in developing and making accessible their databases, and training them in the benefits of focus marketing. This is beginning to pay dividends now as lighthouse cases drive competitors to follow the example, but it is gritty hard work on a relatively shallow if steepening growth curve.
- **Inventory management**

Digital printing permits batch printing of jobs seamlessly within the print factory, as well as enabling customers to call off print only when they need it. This feature of digital printing has had a quietly transformative effect on print consumers who have learned to benefit from it. An awareness is finally developing among users.

- **New Market Discovery**

There are some products which digital can generate which are just not available from analog print. The most famous example is the Photo Book so many of which are printed today on Indigos. Not only did it not exist before digital, it also created a radically new level of value in pricing.

Enhanced Value Product Conversion

Digital press output is high value output largely within specialist applications. These applications call in many cases for maximized product value-add and what you might call 'super-conversion'. Indigo is offering increased capability to provide this kind of added print enhancement in a number of interesting ways as follows:

- **Raised Print**
- **'Textured Effect' Print**
- **Digital Watermark**
- **Light Black Printing**
- **Invisible Inks**
- **'One Shot' printing: allowing printing on films and synthetics**
- **White printing on metallic media**

Improved Process Efficiencies

A part of 'finessing' markets into the mainstream is also making the presses more efficient and raising their productive process characteristics. In this way Indigo are addressing the following issues:

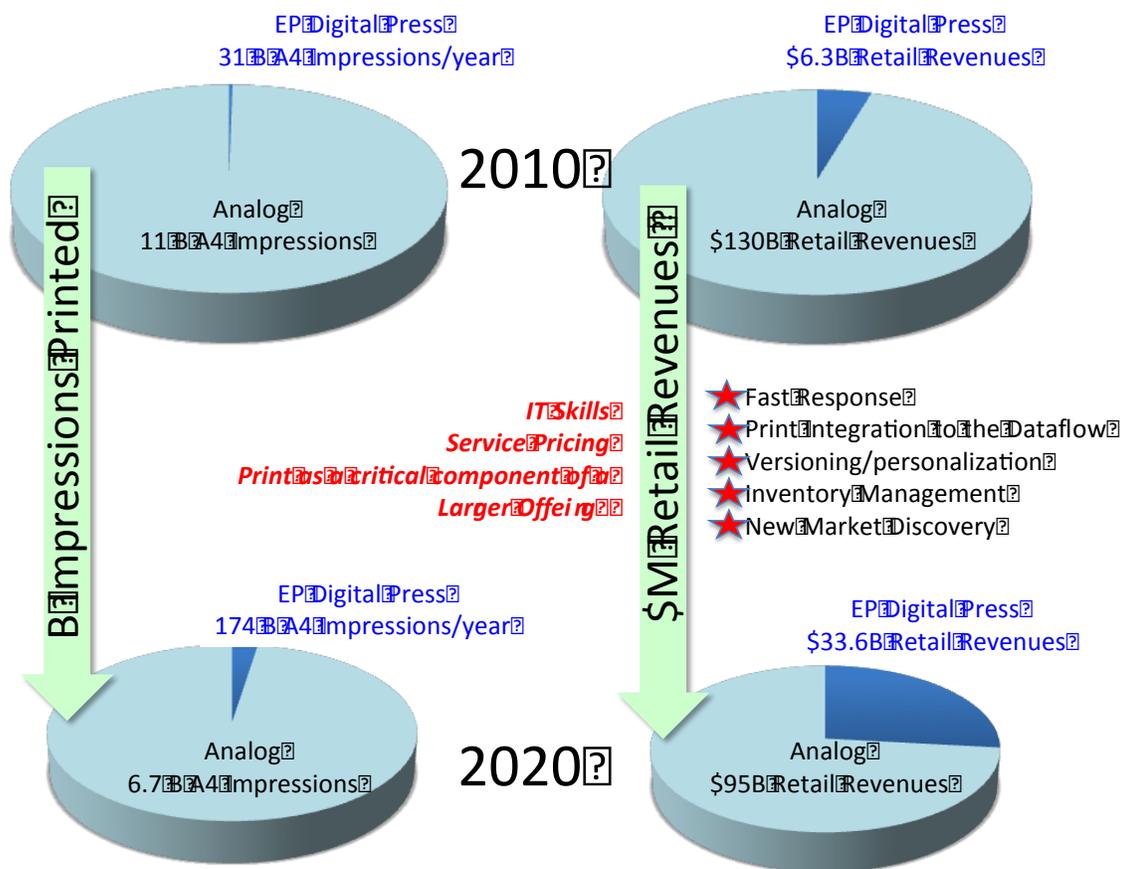
- **Higher speeds through Enhanced Productivity Mode**
- **In-Line priming to increase substrate range and customer flexibility**
- **Defect detection through Automatic alert agent and Vision system**
- **New consumables: lower cost, longer life cycles**
- **Automatic PIP/BID replacement for the new generation B2 productive systems**
- **More efficient ink system involving higher colorant concentrations which reduce the frequency of ink replacement need**
- **Palette paper feed for the new generation B2 systems allowing extended unattended running**

Deepened Commercial Print market leverage

The end result of these commercial print press enhancements is to deepen the leverage of digital presses in the commercial print market at a time when the popular wisdom is that money is being hoarded among offset printers now in order exclusively to spend it on suitable digital systems and not any more on sheetfed offset presses. This really is probably true for very many printers.

Commercial Print market Model for Digital Press

The whole validity of this philosophy lies in not seeing the digital press as a substitute for offset but as a much, much better lever of value per page within a market of limited volumes than analog can ever be. This graphic is an attempt to express the consequences of this philosophy over time as digital presses led by Indigo take a modest number of pages against the total (reducing) analog base but leverage it up to values which represent a large share of the offset total. To put it simply, you can print relatively modest volumes at values which quickly render digital press output a major factor in revenue growth and the dominant factor in margin development:



2 - B2 / 29" wide – The Mainstream Format



B2, otherwise known in the US as half-sheet among commercial printers, is a kind of baseline format in the offset or commercial print world because its dimensions allows most A-sized final print product formats to be printed. Below this you cannot print minimum-sized posters, pocket folders, six-page fold-out A4 brochures, book covers, some types of folding carton packaging and lay-flat books to name some important products. In-house finishing at most PSPs is set up to support sheets of this format, while the smaller format digital presses typically require new finishing equipment.

Importance of availability of full final products range

In total those products do not amount to a very high percentage of all printed products made on average. On the other hand, there is barely a printer who is not called on with some frequency to print such products for their major customers. It is not about volumes of print, it is about being able to offer the full range of products. The psychological importance of this cannot be overstated,

EP takes the B2 Format initiative in Offset Quality equivalence

Furthermore, we had begun to think of B2 as the realm of Inkjet which has already got to 30 inch wide systems (though in continuous feed format), but without EP's and Indigo's in particular, offset-equivalent Print Quality. Indigo have taken the initiative back from Inkjet in this sense by offering B2 with no quality penalty. This what is meant by saying Indigo is entering the format mainstream of the commercial print market.

Digital Vendors take the historic Commercial Print market initiative from Analog Press vendors

B2 has the potential psychological significance of representing a historical turning point where *the digital vendors led by Indigo will be seen to have begun to seriously take over from the analog press vendors* in mainstream print. The prestige and influence of concept ownership for HP Indigo as first-comer is great. The B2 technology is timed perfectly in turn to round out the offering of a company otherwise already driving into the financial mainstream of the commercial print market as described immediately above.

Doubled throughputs with B2

The second factor of significance in the B2 digital press in the eyes of the commercial printer is of course its ability to double the efficiency and throughput of the preceding Indigo generation. That means lower costs and more high price throughput – twice as much in fact.

EP capability in B2 confirmed

From our perspective there is also a third significance to the B2 format as embodied in the EP digital press, and that is its strong statement in favor of EP technology as opposed to Inkjet.

The Technology & the Investment

We should consider how HP Indigo got to this threshold size and enhanced productivity. To get to the latest generation of double B2 format has involved what Indigo describe as the largest single project investment the division has made, perhaps one of, if not the largest project investments of any digital vendor in recent years. We believe it without any doubt.

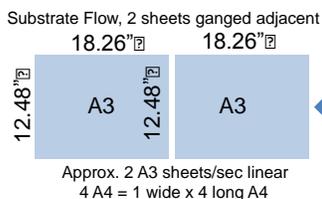
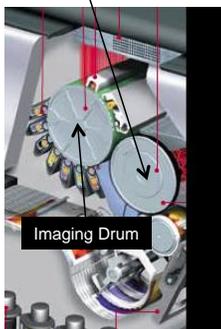
From the perspective of the outside observer this is no small achievement – an enhancement in productivity and format, which no other EP vendor has achieved even in the face of widening print capability in Inkjet. This gives Indigo a lead on any EP vendor, and one most of us thought could not and would not be achieved. We have gone up in format, in throughput and not least, automation.

As an example of Automation at this size and format, automatic replacement of consumables becomes a necessity given their increased size/width. This kind of feature along with others relating to such professional market-critical issues as absolute offset-standard guaranteed color control and consistency over time takes EP definitively out of the world of office-derived technology into the professional production print industry.

Pioneering EP engineering is also to be found in the simple fact of Indigo’s implementation of 29” wide imaging (effectively 2 A3-across) in the 10000. Anyone who has watched the development of EP technology over the last 30 years understands that the ability to sustain image consistency, accuracy and resolution over 29” through the writing head and then in terms of ink uniformity in application to the latent written image, and finally to transfer it with the correct registration to the substrate is a technical achievement of the first order.

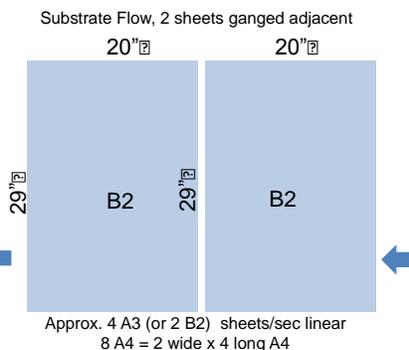
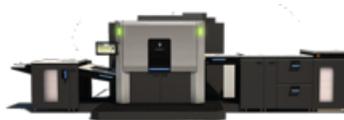
HP Indigo Series 3 Ex. Indigo 7600 Max. Double A3 Image Frame

Series 3 Blanket Diameter
Doubled surface area allows double-size image to be created at fixed/unchanged imaging drum diameter & speed by exploiting the full available imaging drum surface area during a drum revolution



HP Indigo Wide Series Ex. Indigo 10 000 Max. Double B2 Image Frame

Series 4: Essentially a wider printed image



It is this kind of technology which differentiates Indigo-class systems fundamentally from the kind of MFP-derived ‘Light Production’ technology which nips at its heels, and Indigo trumpets itself with the B2 10000 as its leading protagonist and pioneer.

The following graphic summarizes how Indigo evolved the technology through successive generations to go wider and go landscape:

3 - Beyond Commercial Print: Packaging & Industrial Markets

Industrial markets like packaging are not only very big, they are also not subject to any kind of existential threat from virtual alternatives, unlike pure print - at least not as long as products remain physical objects requiring containment of some kind, and have to be identified graphically and informationally on the containment vehicle, which is the packaging.

Packaging a Good Choice

So we look at packaging as certainly the right note for Indigo to strike if they want to be seen as a comprehensive print systems provider in the larger print world.

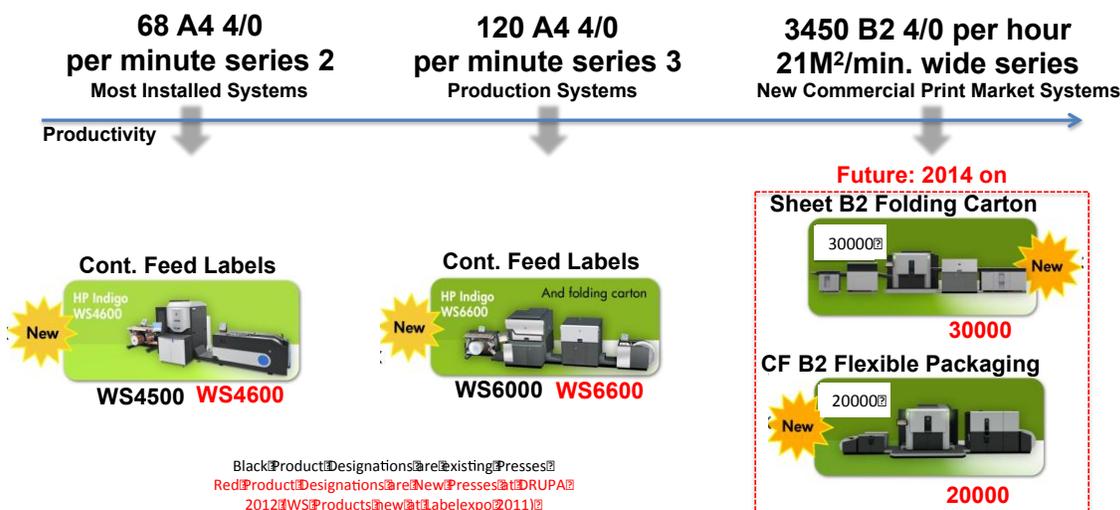
Packaging's enduring volume orientation

But packaging is also a market which is going to be very difficult to penetrate involving a great many choices, and some serious barriers. This is for one thing because packaging, unlike print, cannot so easily be foreseen as a market breaking down for the most part into a small decentralized demand pattern. Packaging seems much more likely to retain its overall volume dynamic for much longer, and that has cost expectation implications on users' part as well.

Packaging's sectoral complexity

For another thing, the packaging substrate and its conversion is far more highly specified and complex than involved in the typical printed document. The packaging market is also a complex series of largely independent sub-sectors all of which may require a significantly separate digital solution.

Indigo Labels & Packaging Presses



Packaging the Biggest and Most Defensible Market Long-Term

From the beginning we have ourselves called Packaging the biggest and most valuable long-term market with the highest degree of need for digital print and the strongest capability to defend itself as a strategic digital market once established. But Packaging is also about very high manufacturing specifications, Go To Market issues, and sector complexity.

Packaging as primarily a manufactured product

Packaging is only secondarily a print product. It is primarily a manufactured product. There is usually a direct dependent relationship of the manufacturing process and the print process as the designs evolve. This overlays complex conditions any new print technology must conform to.

Packaging markets impose difficult choices and limits

The question about which sectors or product groups to pursue with a digital print solution gets to the heart of the Go To Market issues. It will probably be the major determinant of success for the digital print vendor that they learn to limit focus and concentrate resources. Again, this is not so much the commercial print model.

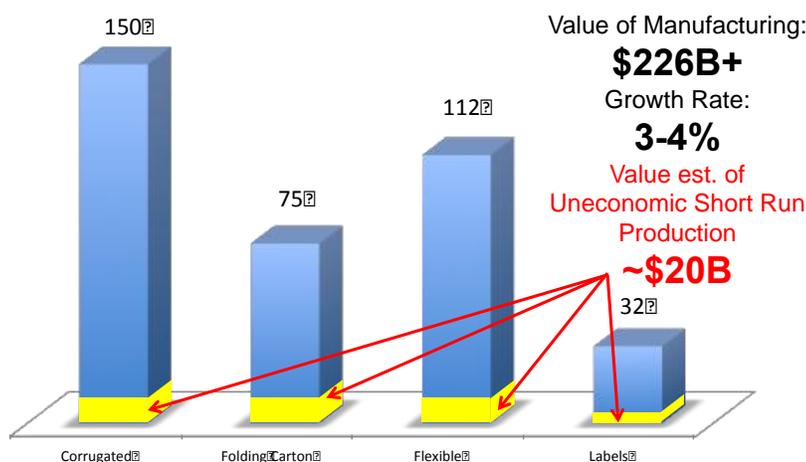
Labels' credibility as Indigo's entrance ticket to Packaging

A big advantage for Indigo in the packaging sector is however that they have indeed already cracked the credibility nut in the labels market which itself is a real packaging market to all intents and purposes. The power of this and the credit which should go to Indigo really cannot in this case be understated. This is a huge competitive headstart and a huge argument in going to the packaging industry. The seven color capability of Indigo presses, and the Esko DFE and workflow integration of the label presses also strengthens Indigo's position. The best stamp of approval of all for Indigo has been that numbers of leading brands have specifically endorsed Indigo print quality and format as acceptable for labeling their products. This suggests that a brand-approval method may well accelerate success in packaging markets in the future.

The First Markets in Prototyping and true Short Run

Prototyping and short run markets are not for high volumes at this time, but their importance functionally to the industry far outweighs their small volumes. Digital can gain credibility at the peripheries, learn and still leverage disproportionately high value in doing so. This applies in all major packaging sectors and the aggregate size of the packaging markets as illustrated below makes a peripheral offering here in fact a market of significant size appropriate to Indigo presses:

Global Packaging Market: BM2 and Manufactured Value



Sources: I T Strategies & Industry Sources

Issues to be Cautious About

Issue: Matching Resources to Growth

It cannot have been easy for a direct sales organization to be absorbed ten years ago into a massive indirect sales organization (HP IPG). We must say it looks to us like Indigo have done well to sustain their own identity and (direct) way of doing things. We do not think Indigo could have been successful without this uninterrupted direct market relationship most importantly in service and support, as well as market development.

Now Indigo faces a step increase in market development potential, with higher throughput customers with enhanced reliability expectations. This will require careful management. It is a balancing act between sales success and the necessarily somewhat lagging support factor. Indigo's choice might properly be to pace the commercial print market sales.

Issue: Inkjet on the horizon

It is fair and healthy for Indigo and EP digital press manufacturers in general to look over their shoulders at Inkjet technology.

Inkjet Continuous feed systems have established a large foothold in digital print markets and are printing very high volumes even now. These volumes are NOT in mainstream markets where Indigo has established markets like commercial print or labels or (in future) packaging. NOR is the print quality of Inkjet yet close to the offset equivalence of EP (especially Indigo). But who is to say that these shortcomings will not be made up?

It is really not possible to be sure about Inkjet's print quality capabilities. The big motivator for it to happen in the eyes of users and vendors is the huge advantage it appears to be developing in print speed and throughput over any other digital print technology and the not-unrelated color cost advantage it appears to be implementing as a matter of policy over other digital color print technologies.

So does high throughput play to the advantage of a decentralized and increasingly customizing print market? Will Inkjet print quality get to be competitive with EP and analog print? Does Inkjet have a separate and complementary pace alongside EP digital presses? None of us knows, but the good news for Indigo is that the advantage is theirs to sustain given their headstart, whatever wonders Inkjet may yet put on stage.

Technical Insights: HP Indigo's Resources, Technologies & Products

R&D and Technology Enhancements

HP Indigo will not publicly state their investment in Indigo technology, though their claim is that the B2 Press development is currently the biggest single investment project in money and human resources in a new product in the production digital printing sector. As the largest printer hardware and supplies manufacturer in the world (about seven times larger than Heidelberg and 15% larger than the next largest digital printer manufacturer, Canon), IT Strategies estimates this investment in high technology is likely to have run HP Indigo in the hundreds of millions of dollars during its multi-year development.

Aside from the breakthrough in sheet size and print width here are another few of the technological advances that have been made recently.

Enhanced Productivity Mode

Enhanced Productivity Mode refers to the ability of Indigo presses to generate acceptable blacks with the three primary process colors without the separate use of black. The elimination of the fourth color (black) allows a speed enhancement of around 30%

A small trade-off during the application of this mode is a minimal reduction intensity of non-black colors. HP say that among their user base they have researched the willingness to accept this mode to be in the range of up to $\frac{3}{4}$ of jobs in the label market though it may vary by application with an assumed greater acceptance in continuous feed applications where quality will be higher. Another trade-off is that you may be using more of the more expensive non-black colors. HP describe themselves as splitting the difference with users where the user gets 33% enhanced productivity or speed and 12% less in print cost compared to 4 color mode. HP also say that the effect of the enhancement is in practice to raise what they state their break-even point is against analog print below which digital is less expensive to use than analog is now up to 50% higher than it used to be.

One Shot print mode

This is an important feature inherent to all continuous feed Indigo presses because of the single engine structure. This printing mode is now extended as an option to the 5600 which enhances its ability to print on films and other synthetics..

Without 'One Shot', Indigo presses lay down color separation ink films successively from the transfer drum to the substrate. But when it comes to films, during that process the peculiar sensitivity of films to tension and temperature tends to cause dimensional instabilities between passes which result in poor registration of the color separation laydowns. To avoid this Indigo implemented the 'One Shot' technique which allows the color separations all to be successively laid down on the transfer drum and then to be transferred all together in one go onto the film substrate, so that registration of the separations has been under control and has not presented a problem before the film substrate itself has been imaged in one shot.

Though One Shot delivers the most accurate color registration, the nature of the one shot process constrains substrate compatibility. Substrates that work well in multi-shot print mode are not compatible with the one shot mode. This has driven the decision to offer in-line priming for most one-shot presses, opening a virtually unlimited substrate gamut.

In-line Priming

Priming of substrates for Indigo presses in order to assure ink film adhesion is a very simple and now almost cost-free feature of Indigo technology. Paradoxically it has come to be regarded as unnecessary for a range of standard uncoated and coated media now. However, as Indigo reaches further into commercial and industrial markets in order to ensure almost total compatibility with any media which might be brought to the presses, HP has decided to offer in-line priming for all its Continuous feed presses, both commercial and label and packaging, as well as the 30000 sheet press for the Folding Carton market. This ensures support of an extensive range of paper and synthetic media.

Automatic Alert Agent & Vision Systems

This refers to on-press scanners and algorithms which track variances in print quality as well as the video on-press systems which track and flag defects. The Alert Agent has variable levels of sensitivity depending on the demands of different job types.

Available Color Stations

The Indigo presses allow either 4, 5, 6 or 7 color stations. They can include:

- CMYK
- Orange, Violet, Green
- Any spot color – which can be created on-site with the ink mixing system, or ordered via off-site services
- White Electroink
- Photo Inks (Light Cyan, Light Magenta)
- Invisible Ink (for the 5600)
- Transparent ink for raised print and watermark effects – 7600
- Light Black ElectroInk
- Digital matte

Light Black

Though all Indigo presses can print high speed mono – typically though not necessarily black; Indigo are introducing a new Light Black Electroink to be used in combination with regular black for black and white photography – whether photographic books or prints. The two color printing will be twice as fast as regular 4-color printing, and will ensure neutral grays, good tonal range and therefore the high quality expected by the most demanding professional photographers. It is currently qualified for availability on the Indigo 5x00 and 7x00 presses

Invisible Inks

Invisible inks detectable by UV florescent light and which glow bright red are made available in leverage of the specialty orientation of the Indigo markets in a lower volume environment best suited to the application of this kind of anti-counterfeiting technique.

'Textured Effect' Print

This is another specialty feature available on a number of Indigo's presses. It consists in printing many layers of a compound direct to the transfer drum in the shape of an image to be embossed onto a substrate. It is printed to the transfer drum so often that the image begins to build in relief. It is cured to a hardness level that allows it to act as a positive die embossing an image physically on a paper or carton substrate. It takes about 250 passes to build the die, and has a life of around 500 textured sheets.

Raised Print

Textured print consists of utilizing transparent inks up to about 50 hits to generate a raised textured image on a substrate. This works at about 2-5 pages per minute throughput at highest raised level. Once again Indigo is leveraging the demand that tends to gravitate around Indigo presses in the current market for highly converted costly output within a favorable price environment.

Digital Watermark

This allows an Indigo Press to place a personalized, semi-covert pattern into your digital image as a means of enhancing security and linking to a variety of database information. It uses the same principle as the Raised Print, but with only 1-3 separations.

New Imaging Oil System

This refers to a system which removes tiny ink particles from recycled imaging oil to increase PIP & BID lifespan & improve color consistency. This is coming to be implemented over the large majority of Indigo presses.

Black/Transparent Substrate Detection

In the past Indigo systems had had difficulty recognizing the presence for picking within the system of either back or transparent sheet substrates.

New Binary Ink Developer

The Binary Ink Developer (BID) is the unit which brings the Electro Inks direct to the Photo Imaging Plate (PIP). The new BID system referred to here is a version with higher reliability and longer life.

New Blanket

The blanket is the outer sheath of the receiving 'offset' drum on which carries the formed color-separated images from the PIP to the substrate (or on which all separations are formed as is the case of Single Shot). The blanket has been adjusted to Improve print quality by increasing registration accuracy & reducing memories and increase lifespan by 50%, through a new blanket formulation and jam prevention system.



Automated BID/PIP Changing System

This feature will only be available for the high production environment B2-sized series 4 systems 10000, 20000 and 30000.

Fast monochrome print mode

In fast monochrome mode you simply are able to print a monochrome image at four times the speed of a process color CMYK image. This is because you only need to image the drum and transfer that image to the substrate once in place of four successive times, as you would have to do in process color imaging. This results in greatly enhanced monochrome speeds by comparison to full color speeds and is available on all the Commercial Print Market presses of Indigo at the speed values indicated in the specs tables for each system. Speed is further enhanced by ganging pages from separate jobs into spare space within individual page frames. Because of paper handling system limitations, not all sheet-fed Indigo presses offer the 4x mono speed. On the Indigo W7250, the result is a 960ppm press – with some limited paper waste resulting from the non-image area of the blanket clamps.

Ink Feed Efficiency

Indigo have roughly trebled the capacity of the ink cartridges in the wide series presses to around 4.5KG, and have also doubled the concentration of solids in the ink cartridge from around 20% to around 40%. This is later diluted with imaging oil in the system down to less than 4%. The overall yield of an ink cartridge in the wide series presses is now about 6 times that of the series 3 presses, as suits a mainstream commercial print production press of course.

Palette Substrate Feed

The new wide series 10000 now has a palette feed station enabling larger volumes of continuous print permitting up to 9 hours of uninterrupted print.

Press Features Cross-Reference

We provide below an at-a-glance overview of the availability of the features listed above by Indigo press

		Indigo Features Cross-Reference														
Technology Series		S.2	S.2	S.2	S.3	S.3	S.3	S.3	S.3	wide series	S.2	S.2	S.3	S.3	wide series	wide series
Format		Sht A3	Sht A3	Sht A3	CF 13" w	CF 13" w	CF 13" w	Sht A3	Sht A3	B2	CF 13" w	CF 13" w	CF 13" w	CF 13" w	B2	B2
Green = Commercial Press		X 3550	X 5500	X 5600	X W7200	X W7250	X WS600P	X 7500	X 7600	X 10000	X WS4550	X WS4650	X WS6000	X WS6600	X 20000	X 30000
Yellow = Label & Packaging Press																
Enhanced Productivity Mode		X	X	Option	Option	X	X	Option	X	TBA			Option	X	X	TBA
Number of Available Colors		5	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Light Black			X	X					X	X					X	X
Invisible Inks												X				
In-Line Priming					X	X	X			X	X	X	X	X	X	X
One Shot		X	Option	Option	X	X	X			X	X	X	X	X	X	X
Defect Detection & Vision Systems								X	X	X			X	X	X	X
Raised Print								X	Option							
Textured Effects								X	Option							
Digital Watermark								X	Option							
New Imaging Oil			X	X				X	X	X				X	X	X
Black/Transparent Substrate Detection				X				X	X	X					X	X
New Blanket								X	X	X			X	X	X	X
Automated BID/PIP Replacement										X					X	X
Fast Mono Mode			X	X	X	X									X	X
Ink Feed Efficiency										X					X	X
Palette Substrate Feed										X					X	X

Workflow

To judge by what we see in the traditional analog printing markets, workflow as an automated software-driven 'intelligence' driving the print market is almost optional. It is certainly not consistent. Shift your perspective to the digital print sectors in which Indigo is active and there is no such choice.

The emerging digital production printing markets only exist because they enable a far richer, more diverse, fragmented and higher value range of products to be printed. And as those markets get bigger and competition increases, the economics become more efficient for users. In concrete terms there is more product in more applications at lower unit costs than ever before in the digital production printing markets. The shifting economic dynamics and physical complexity of the production process and its real-time connection at either end to the Web and to finishing require integrated workflow. It is not about fitting into the analog world. The digital world has already far by-passed that world in workflow functional terms.

For Indigo workflow is not just a nice option to be able to offer, it becomes an integral and necessary part of the whole production digital print offering. SmartStream is HP's Workflow ecosystem. It includes a range of products which build on values of modularity and scalability, and which recognize- that the complexity of applications and configurations do not allow for HP to be able to offer all the answers. That in turn drives HP's partnership model which involves 75 partner companies generating with HP 208 products within 36 solutions categories. Many partners are able to integrate their products with the HP SmartStream ecosystem by using open Software Development Kits (SDSs) that ensure tight, bi-directional and efficient integration. HP tests and certifies the integrations with its partners solutions and ensures the customers can enjoy a reliable and efficient workflow.

SmartStream offers a progression of components from creation & submission, through print servers, to Printing itself, and on to Finishing. Workflow in SmartStream's case is anchored with a scalable range of physical print servers or Digital Front Ends (DFEs). This is the heart of a digital production printing system and it drives more than just a print function. It drives a whole process increasingly, in the case of digital, including multiple post-print finishing processes at the back-end and taking in created content from the Web at the front end. Tight JDF-compliant finishing integration is built-in to the newest version of the HP SmartStream Production Pro DFE

HP have announced a new product, Smart Stream Production Center, a workflow system built to meet the challenges of receiving, producing, and delivering high volumes of short-run jobs, reducing turnaround time and increasing profitability. It monitors production, automatically plans production, and manages the queues for each process. Production Center integrates with other SmartStream products as well as third party applications, including web-to-print using SDKs. This is an interesting initiative, carving out a new space in the workflow ecosystem, that complements MIS. Given that HP recently announced the acquisition of Hiflex, it will be interesting to see how they integrate with one another. .

Finally, HP have been working hard to design and offer integrated finishing systems for their Indigo systems that are optimized for digital production. At Ipex they announced the PageReady together with Lasermax Roll System. Now, together with the announcement of the Indigo 10000, HP and Horizon jointly announced that the Japanese company is developing a new slit/merge/stack system for the Indigo 10000 to be known as the SmartStacker. Such products are not to be viewed as just add-ons. They are components of integrated manufacturing systems and with the DFE and the SmartStream Workflow software form the beating heart of such integrated manufacturing systems for HP. This is to move conceptually far beyond print and to



think like an Indigo-buying customer thinks. This differentiates HP Indigo from their competition to a very significant extent.



Conclusion & Summary: Indigo's 3 Signal Achievements to 2012

Commitment: The Rewards of Investment Depth of investment in R&D and Time

Announced 4 years ago, well over 1000 Series 3 Indigo presses are installed today, which have driven great page growth for Indigo that has in turn translated into significant revenues and profitability for customers. This has been in part the result of short product development cycles, which have seen products like the Indigo 7000 come to market in 2008, the 7500 in 2010, the 7600 in 2012, as well as the new generation Indigo 7000 in 2008 and now another new generation, the Indigo 10000 in 2012/13.

No one can take away from Indigo their 30 years of commitment to their own technology and its place in the market. They said their technology would match analog, and today it is so perceived to a degree not enjoyed by any other technology. They said their vision would fundamentally alter analog print markets by creating new value for print, and that goal too is coming within the grasp of the professional print markets pioneered by Indigo, and still led by Indigo. For many, Indigo presses produce a significant share of their revenue and greater share of their profits. Indigo's success can fairly be said to be a direct product of their customers' success.

To achieve these goals Indigo and, in the last ten years, HP will have invested hundreds of millions of dollars directly in the technology. Just as importantly however Indigo also invested large resources and many years in understanding markets and holding users' hands during installation, market development and technology transition. There is real evidence for this in their break into the conservative and 100% analog label market over recent years. This, combined with Indigo's acceptance by the whole offset community as having output print quality equivalence to offset within another traditionally conservative community, are achievements in which Indigo leads the digital vendor community.

Technology: More Than Presses: Integrative Components of the Digital Dataflow Spectrum The Pace Quickens in an Era of Change driven by Indigo

In simple product terms at DRUPA 2012 Indigo will have reached a print format in B2 and at a print quality level unmatched by their competition, but the technology achievement is deeper than this makes it sound. Production digital color printing is not and never has been about substituting for analog print.

Of greater significance is the ability of digital color production printing systems to integrate themselves into the growing and diversifying dataflow driving modern B2B markets. It is this characteristic which will allow production color digital printing technology to take its place in the future unified spectrum of communications technologies as a *process component* of critical value in a way analog print cannot do.

Print seems likely to continue to play a role as a communications format of maximum perceived graphic quality and value. It may well be that the only way it will realize that in future will be in its digital format. This is the wave Indigo rides at its crest.



**Vision: Digital Print for All Markets
Not just about Documents Any More**

Finally, Indigo have committed in 2012, building on label market successes already achieved, to all of the print market, including industrial and packaging print, far beyond just the document. This is a recognition that over the long term the most defensible and profitable markets of all are indeed beyond just documents.